

Second edition
2013-07-15

AMENDMENT 1
2016-06-01

**Safety devices for protection against
excessive pressure —**

Part 7:
Common data

AMENDMENT 1

*Dispositifs de sécurité pour protection contre les pressions
excessives —*

Partie 7: Données communes

AMENDEMENT 1



Reference number
ISO 4126-7:2013/Amd.1:2016(E)

© ISO 2016

STANDARDSISO.COM : Click to view the full PDF of ISO 4126-7:2013/Amd 1:2016



COPYRIGHT PROTECTED DOCUMENT

© ISO 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

Amendment 1 to ISO 4126-7:2013 was prepared by Technical Committee ISO/TC 185, *Safety devices for protection against excessive pressure*.

STANDARDSISO.COM : Click to view the full PDF of ISO 4126-7:2013/Amd 1:2016

Safety devices for protection against excessive pressure —

Part 7: Common data

AMENDMENT 1

Page 5

Formula 9

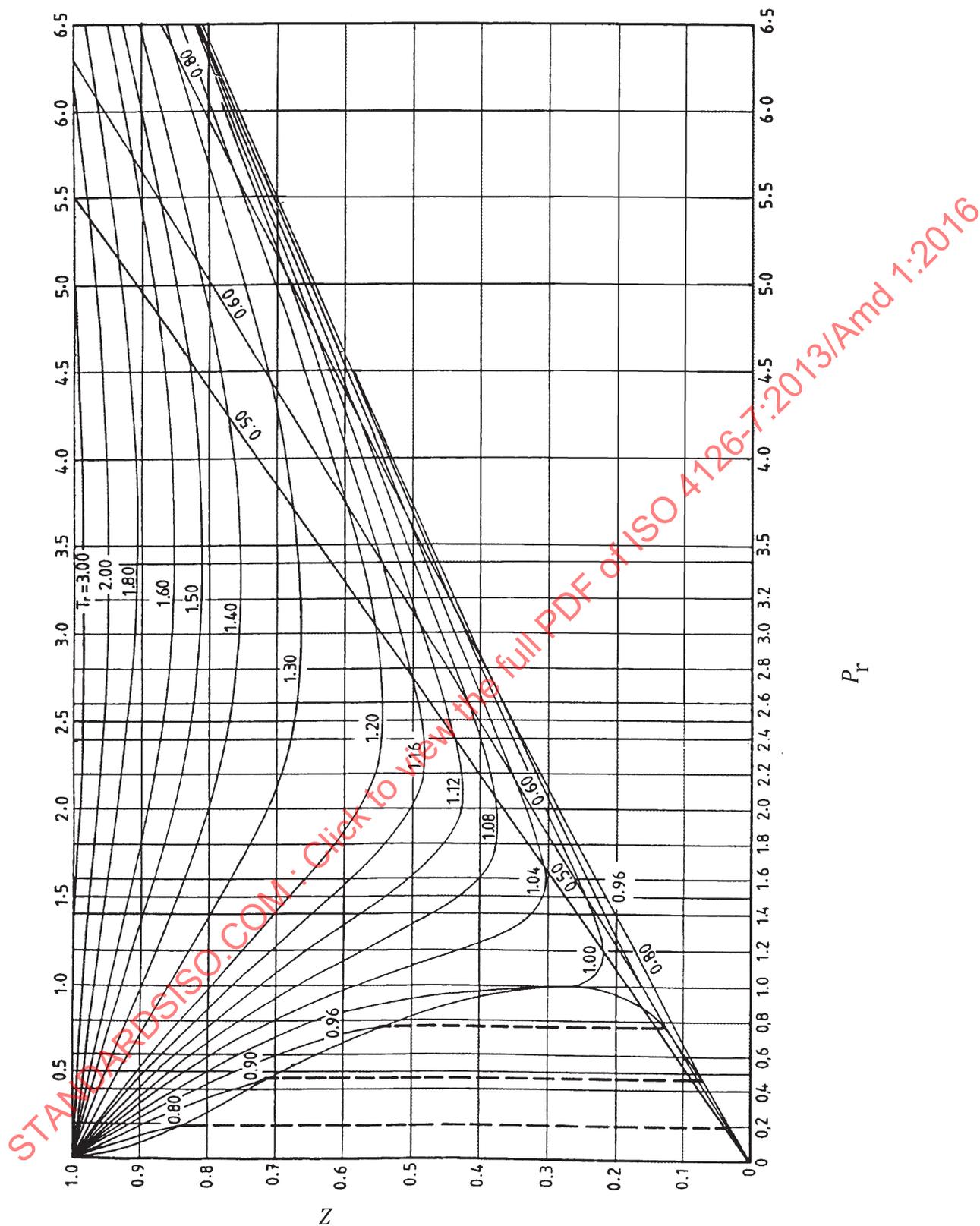
Delete the equation and substitute:

$$3,948 = \frac{3600}{\sqrt{10^5} \times \sqrt{R}}$$

Page 20

Figure 1

Delete the figure and substitute new figure on following page.



Key

- P_r reduced pressure
- T_r reduced temperature
- Z compressibility factor

Figure 1 — Estimating chart for compressibility factor, Z

Page 28

Clause A.1 Capacity calculations for gaseous media at critical flow (6.3.3.1)

Delete A.1 Example 1 and substitute:

EXAMPLE 1 Calculate the flow area of a safety valve to be used on a vessel holding nitrogen gas with a maximum allowable pressure, PS of 10 bar gauge (1,0 MPa).

Safety valve certified de-rated coefficient of discharge [K_{dr}] at 10 % overpressure	= 0,87
Molar mass of the gas [M]	= 28,02
Isentropic exponent of the gas [k]	= 1,40
Gas relieving temperature	= 20 °C
Required gas flow capacity	= 18 000 kg/h
Set pressure	= 10 bar (1,0 MPa)
Back pressure	atmospheric
T_o	= 20 + 273 = 293 K
p_o	= [10 × 1,1] + 1 = 12 bar (abs)

Since $\frac{p_b}{p_o} \leq \left(\frac{2}{k+1}\right)^{(k/(k-1))}$ the flow is critical.

The required area, $A = \frac{Q_m}{p_o CK_{dr} \sqrt{\frac{M}{ZT_o}}}$

$$C = 3,948 \sqrt{1,4 \times \left(\frac{2}{1,4+1}\right)^{(1,4+1)/(1,4-1)}} = 2,7$$

Values for factor C can also be obtained from Table 3.

Compressibility factor, Z, may be estimated from published data.

The calculation involved is as follows:

$$\text{Reduced pressure, } P_r = \frac{p_o}{p_c}$$

where

p_c is the critical pressure = 33,94 bar (abs.) = 3,394 MPa abs (from a thermodynamics handbook).

$$\text{Reduced temperature, } T_r = \frac{T_o}{T_c}$$

where

T_c is the critical temperature = 126,05 K (from a thermodynamics handbook);

$$p_r = 12/33,94 = 0,35;$$

$$T_r = 293/126,05 = 2,32;$$

$$Z = 1,000 \text{ (from Figure 1).}$$

$$A = \frac{18\,000}{12 \times 2,7 \times 0,87 \times \sqrt{\frac{28,02}{1,00 \times 293}}} = 2\,065 \text{ mm}^2$$

STANDARDSISO.COM : Click to view the full PDF of ISO 4126-7:2013/Amd 1:2016